

Occupational Pesticide Exposures among a Group of Seasonal and Migrant Farmworkers in the Texas Panhandle, 2014

A Case Report

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Pesticide Exposure Surveillance in Texas (PEST) Program
Environmental Epidemiology and Disease Registries Section



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Occupational pesticide exposures among a group of seasonal and migrant farmworkers in the Texas Panhandle, 2014

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REPORT SUMMARY

On July 11, 2014, a group of migrant and seasonal farmworkers (MSFW) were exposed to pesticides while working on a farm in the Texas Panhandle. While the workers were weeding a sorghum field, a pesticide applicator sprayed a mixture of two herbicides without prior warning nor notice to clear the field. During the pesticide application, five out of 14 MSFWs got exposed to pesticides because of close proximity to the pesticide sprayer rig.

Three months after the incident, one of the workers notified the Pesticide Exposure Surveillance in Texas (PEST) program at the Texas Department of State Health Services (DSHS) regarding the exposure. The PEST program conducted a follow-up investigation and found that the five exposed workers developed varying degree of signs and symptoms of pesticide-related illness, predominately respiratory and neurological symptoms post exposure.

This report discusses the methods for data collection, the health outcomes of the workers, and recommendations to prevent similar events and improve reporting of occupational pesticide exposures.

INTRODUCTION

Pesticide Exposure Surveillance in Texas (PEST)

Acute occupational pesticide poisoning is a reportable condition in Texas under the Texas Administrative Code, Title 25, Rule 99.1, which implements the Occupational Conditions Reporting Act, Chapter 84 of the Texas Health and Safety Code. The Department of State Health Services (DSHS) Pesticide Exposure Surveillance in Texas (PEST) program maintains a passive acute occupational pesticide poisoning (AOPP) surveillance system. The PEST program receives AOPP reports from several sources including the Texas Poison Control Network (TPCN), Texas Workforce Commission (Workers' Compensation Claims), Texas Department of Agriculture (TDA), health care providers, other local and state programs and agencies, and self-report.

Who are migrant and seasonal farmworkers (MSFWs)?

A seasonal farmworker is "an individual who is employed, or was employed in the past 12 months, in farm work of a seasonal or other temporary nature and is not required to be absent overnight from his/her permanent place of residence"¹. A migrant farmworker is "a seasonal farmworker who travels to the job site so that the farmworker is not reasonably able to return to his/her permanent residence within the same day"¹.

Migrant and seasonal farmworkers (MSFWs) are involved in farm activities, such as picking fruit and vegetables, doing supportive chores in crop production, harvesting, and weeding the fields¹.

BACKGROUND

On October 6, 2014, a MSFW reported a pesticide exposure by phone to the PEST program. This call was of special significance because the program seldom receives pesticide exposure reports directly from farmworkers. The caller reported that a group of MSFWs were exposed to pesticides while working on a farm in the Texas Panhandle, the northernmost part of the state. The caller stated that the incident occurred on July 11, 2014 around 3:00 PM, about three months prior to the call. The caller reported that a fellow worker had been doused in pesticides and four other workers, including himself, were also exposed to a lesser extent. According to the caller, some of the exposed workers were transported to a nearby hospital emergency room for medical treatment.

This report further discusses approaches used to collect information regarding the incident and related outcomes among the exposed MSFWs,

and summarizes the findings of these follow-up activities. The investigation provides insights on how such AOPPs can be prevented in the future, and how the PEST program can improve occupational pesticide poisoning surveillance and case reporting among MSFWs in Texas.

METHODS

Case follow-up investigation

A. Worker Interviews

Between October 6 and October 13, 2014, PEST program staff conducted phone interviews with all five reportedly-exposed workers. Prior to interview, PEST program staff explained the purpose of the interview, and assured the workers that information provided during the interview would be kept confidential.

Interview tool: AOPP follow-up questionnaire

Interviews were conducted using the standard PEST program AOPP follow-up questionnaire. Staff obtained information on demographics, employment and occupation, circumstances surrounding the incident including the type and route of exposure, location of the incident, pesticide(s) used, equipment used for pesticide application, target of application, signs and symptoms occurring post-exposure, laboratory tests performed (if any) and its results, medical diagnosis, treatment, and type of personal protective equipment (PPE) used.

B. Medical Records

After completing follow-up interviews with all workers, PEST program staff requested medical records for those who required medical attention post incident. Staff reviewed the medical charts to obtain details on signs, symptoms, diagnostic tests performed, diagnosis, treatment procedures, and other medical history.

RESULTS

Case follow-up investigation

MSFWs

On the day of the incident (July 11, 2014), a group of farmworkers (n=14) was weeding a sorghum field located in the Texas Panhandle. Five out of 14 (36%) workers were exposed to pesticides. All five exposed workers were MSFWs, Hispanic, primarily spoke Spanish, and worked for a local contractor.

Exposure or incident description

While the 14 farmworkers were weeding the field, a ground sprayer rig entered the field and started spraying pesticides. The five exposed workers who were interviewed reported they had no prior warning of the pesticide application nor did the pesticide applicator give them notice to clear the field before spraying pesticides. All five reported they were in vicinity of the pesticide sprayer rig and hence got exposed. The worker closest to the rig was doused in pesticides. All five exposed MSFWs reported no use of PPE while performing their routine work. After exposure, workers learned that the pesticide was a mixture of two herbicides: herbicide A and herbicide B.

Herbicide A contained atrazine, a restricted use herbicide that offers broadleaf and grass weed control in corn, grain crops, forage sorghum, sugarcane, conifers, macadamia nuts, guava, chemical fallow and other uses. Atrazine has low to moderate toxicity on short-term (1-30 days) dermal or inhalational exposure, and may cause skin, eye or respiratory irritation². Herbicide B was a combination of pyrasulfotole (3.3%) and bromoxynil [bromoxynil octanoate (13.4%) and bromoxynil heptanoate (12.9%)]. Pyrasulfotole and bromoxynil are selective post emergence herbicides for control of important broadleaf weeds, such as tall water hemp, palmer amaranth, redroot pigweed in grain sorghum and forage. Both pyrasulfotole and bromoxynil have moderate toxicity on short-term dermal or inhalational exposure, and may cause eye and skin irritation^{3, 4}. Bromoxynil has also been classified as a possible cancer causing agent in humans⁴. The restricted-entry interval to protect worker from post-application exposures to atrazine or pyrasulfotole-based herbicides is 12 hours^{2, 3} and bromoxynil is 24 hours⁴.

Health and medical outcomes of the incident

The five exposed workers developed a varying degree of signs and symptoms of pesticide-related illness after the exposure. The workers reported the following signs and symptoms of AOPP:

- | | | |
|---------------|----------------|-------------|
| • Tiredness | • Shortness of | • Headache |
| • Sore throat | breath | • Dizziness |
| • Cough | • Nausea | • Weakness |
| | • Vomiting | |

The workers who sought medical care at the hospital emergency room in a nearby town on the day of the incident were given treatment and discharged home on the same day. They were recommended a medical follow-up after 2-3 days. During the interview workers also indicated they

had no medical insurance and the employer refused to cover medical expenses for workers who sought medical care.

DISCUSSION AND RECOMMENDATIONS

The Texas Panhandle pesticide exposure incident that occurred on July 11, 2014, could have been prevented through observance of the Workers Protection Standard (WPS)*, which includes:

- A contractor in charge of farmworkers must properly notify workers of any scheduled pesticide applications ahead of time. Signs should be placed early in the day to warn workers of the upcoming pesticide application.
- Coordinating the timing of pesticide applications such that:
 - The pesticide applicator waits until all the workers have cleared the field before proceeding to apply pesticides, and
 - The workers do not enter the field too early following the application of the pesticides.

Previous research suggests that MSFWs often: a) have lower income levels and live in poor housing conditions, which is linked to exposures such as crowding, pests, mold, mildew, pesticides, etc., b) lack training and protection to properly identify and handle farm hazards such as pesticides, c) lack access to affordable medical care, d) suffer from health consequences resulting from different occupational hazards, and e) are concerned about losing their job or being discriminated at work for reporting injuries and illnesses⁵⁻⁹.

The PEST program will conduct the following activities among MSFWs to prevent future pesticide exposures such as this incident:

- Conduct education and outreach activities with MSFWs, farm business owners, contractors, and pesticide distributors and applicators. These activities will emphasize:
 - Regulations and safe practices for using pesticides, including WPS, use of personal protective equipment (PPE), and how to read and understand pesticide label instructions.

* The EPA Worker Protection Standard is, "a standard designed to reduce the risks of illness or injury resulting from workers' and handlers' occupational exposures to pesticides used in the production of agricultural plants on farms or in nurseries, greenhouses, and forests and also from the accidental exposure of workers and other persons to such pesticides. It requires workplace practices designed to reduce or eliminate exposure to pesticides and establishes procedures for responding to exposure-related emergencies," (40 CFR § 170.1).

- Health risks related to pesticide exposure and what to do if they are exposed to pesticide.
- Pesticide exposure reporting requirements in Texas.
- Liability and rights under the Title 5, Texas Workers' compensation Act, Texas Labor Code.
- Establish and strengthen partnerships:
 - Partnerships between the PEST program and farmworker organizations: These partnerships, will allow the program to conduct outreach activities among farmworkers, enhance awareness of the PEST program, and encourage pesticide reporting.
 - Partnership between the PEST program and migrant health clinics: Health care providers at migrant health clinics run by organizations such as Migrant Clinician Network and National Center for Farmworker Health more frequently work with MSFWs and serve their health needs. Through this partnership, the PEST program will educate health care providers on different pesticide exposures occurring in farmworker communities, and AOPP reporting requirements. These efforts may help improve diagnosis and reporting of AOPP by physicians and other health care providers.

Additional steps that could be taken to prevent AOPP among MSFWs include:

- Increase awareness of occupational pesticide exposures and reporting requirements in general public using different communication channels including radio, TV, social media, internet, newspapers, and magazines.
- Governmental assistance, such as low interest loans, to small employers and small agricultural operations who may not be in a position to adequately provide all that is necessary to provide a safe working environment, (ex: portable showers and hand washing stations for decontamination) to comply with WPS, to provide training and education to their farmworkers, etc.

CONCLUSION

AOPP is preventable. Increased efforts are needed to: 1) educate the public, including MSFWs and other entities involved in agricultural production activities, on safe practices for using pesticides, and 2) encourage compliance with pesticide use regulations and reporting requirements.

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